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Low back pain among physicians, Saudi Arabia 2020

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ABSTRACT

Background: Low back pain is defined as pain and discomfort located below the costal border and superior to the inferior gluteal sulcus, with or without leg pain. It is an important cause of disability among physicians. *Objectives*: To describe the pattern of LBP among physicians and determine factors those affect it in Saudi Arabia 2020. *Methods:* An online survey was carried out from August through October 2020 including 213 physicians. They were divided according to their functional disability level into: group I with no disability (N=95) and group II with disability (N=118) using Oswestry questionnaire. Mean percent scores for comorbidities, obstetric and gynecological histories, Oswestry functional disability and life styles were calculated. *Results*: Group II mean age was substantially higher than group I [46.9 years (8.91), 41.3 years (7.52), p= 0.043]. 75.4% of group II significantly worked in surgical specialties (p=0.026). Both score percent for menopausal and menstruating females and life styles score were significantly higher in group II [52.9 (9.35), 54.1 97.53), p= 0.032, 0.023, 66.3 (11.86), p=0.045 respectively]. The overall functional disability score for group II was 59.9%. Significant predictors for LBP were: age (OR=3.8, p=0.030), specialty (OR= 2.5, p=0.005), marital status (OR= 1.6, p=0.038), obstetric and gynecological scores (OR=4.8, p=0.002), life style total score (OR= 3.2, p= 0.006), BMI (OR=2.5, p=0.01) and total comorbidity score (OR= 2.1, p=0.034). *Conclusion*: Predictors for LBP functional disability were age, specialty, marital status, obstetric and gynecological histories, life styles and comorbidities. Disability affects walking, sitting, standing, travelling and social life.

Keywords: Low back pain; Functional disability; Oswestry questionnaire; Physicians

1. INTRODUCTION

Since the past decade, low back pain (LBP) became a wide spread problem all over the world (Walker, 2000). Worldwide prevalence of LBP ranges between 15- 45% (David, 2005), regarding Saudi Arabia; it is about 18.8- 53.5% (Parreira et al., 2005; Al-Arfag et al., 2003). LBP is defined as a sensation of pain, muscle tenseness, and stiffness below the costal border and Superior to the inferior gluteal sulcus, it may be associated with leg pain (El Nagger et al., 2015). Pain can range from a dull, continuous aching to sharp pain that can strike at any

time as a result of an accident or carrying something heavy, or it can build over time as part of the aging process (Meucci et al., 2015). Acute LBP can last between a few days to several weeks while chronic one is usually persist up for more than 12 weeks. About 20% of people with acute LBP develop chronic one with persistence of symptoms up to one year and even more (Meucci et al., 2015).

Many researchers concluded that many cases with LBP have no specific cause. The most common underlying mechanisms include degenerative or traumatic changes, some diseases and inflammatory disorders, tumors of the vertebrae, neural tissues and adjacent structures (Gouveia, 2016). Some risk factors could enhance occurrence of LBP including personal, occupational and psychosocial factors (Koes et al., 2006). Personal risk factors include gender, age, body mass index, family history, smoking and physical activity (Ikram et al., 2020). Physical strain, long bending forwards, lifting heavy objects, vibration exposure, and long periods of standing in the same position are all occupational risk factors (Koes et al., 2006). The impacts of neurological systems that affect the reaction to a painful stimulus mediated by serotonin and norepinephrine in the brain is the explanation of psychosocial risk factors (Helfenstein, 2010). In both developed and developing nations, it has becomean important factor that cause disease burden (Burke, 1964). It has a great effect on work performance and therefore an obvious economic effect. It increases the days of sick leave with of working days, shortening of performance and minifying of productivity (Govindu, 2014; Yilmaz et al., 2009).

Low back pain is an important factor that can lead to disability among health-care workers especially physicians; with their great workload and effort that affects their job quality and performance and lead them to continuous use of analgesics and pain-relief drugs (Gouveia et al., 2017; Holtermann et al., 2013). According to a Taiwanese study, 72% of HCWs suffer from LBP Health-care workers (HCWs) can be chronic analgesic and pain-relief drug users as a result of LBP (Gouveia et al., 2017).

Many researches that handle LBP among physician in Saudi Arabia but still LBP among physicians and predictors for its development are not well clarified. So this study was carried out to describe the pattern of LBP physicians and determine factors those affect it in Saudi Arabia.

2. SUBJECTS AND METHODS

Study Context and Design

A cross-sectional study using online questionnaire was conducted by researchers from Ibn Sina National College for Medical Studies (ISNC) starting from August to October 2020 (with 3 months duration).

Sampling

A convenient sample of male and female physicians working in a private and public sector in Saudi Arabia was included the study. The sample size was calculated as 213 physicians; (Daniel, 1999). The sample size was calculated as 213 physicians; divided by their functional disability level into 2 groups: group I with no disability (N=95) and group II with disability (N=118) (Table 1).

Table 1 LBP functional disability level among the studied physicians

	Functional disability level	N=213	%
Group I: *No disability (0-4)*		95	44.6
Group II: *With disability*		118	55.4
	Mild disability (5-14)	(57)	(48.3)
	Moderate disability (15-24)	(43)	(36.4)
	Sever disability (25-34)	(16)	(13.6)
	Completely disabled (35-40)	(2)	(1.7)

Data Collection Methods

A questionnaire in both Arabic and English was designed. It included sociodemographic data as age, gender, marital status and medical history. Oswestry questionnaire was used (Fairbank & Pynsent, 2000). The study tool formed of closed ended questions. It was also pilot tested. The value of Cronbach's alpha was 0.86.

Ethical Considerations

IEC Ref No was 01-11032021 (as given by the researchers' institute that approved the study). After the study objectives were announced, all participants gave their informed written consent over the internet. Ethical issues were assured throughout the research steps. Confidentiality of the collected data was assured.

Statistical analysis

SPSS version 22 was used for data entry and analysis. Comparison of those who had not functional disability (group I) and those who had functional disability (group II) was done. Description was done for all variables. A univariate analysis, Chi-square test and independent-samples t-test were used. The independent predictors of LBP were determined using the multivariate analysis forward stepwise (Wald) approach to compensate for any confounding. Variables that contained multivariate analysis were age, marital status, gender, specialty, working hours, comorbid condition, lifestyles, body mass index (BMI), and for females: obstetric and gynecological histories. The age-adjusted prevalence odds ratio (OR), as well as the 95% confidence interval (CI), are displayed and calculated straight from the logistic regression. Any p-value less than 0.05 were considered significant.

Scores for comorbidities, obstetric and gynecological histories for menopausal and menstruating females, Oswestry functional disability and life styles for all participants were calculated by summation of the given scores according to participants' answers for the related questions divided by maximum expected scores.

The answers of questions that were considered in calculation were scored (if binary question, it would be 1 for first choice and 2 for second one). If the question had more than 2 answers; then the actual answers for that question were summated as binary one. Then, the score for those questions was calculated. To calculate the mean percent score, the mean value of the score ± SD was multiplied by 100.

3. RESULTS

The total number of physicians included in this study was 213; 95 (44.6%) in group I (without functional disability) and 118 (55.4%) in group II (With functional disability). Group II mean age was substantially higher than group I [46.9 years 98.91), 41.3 years (7.52), p= 0.043 respectively] (Table 2). More than half (53.5%) of all participants was females, 51.2% were non Saudi and 71.4% were ever married. Three fourths (75.4%) of group II significantly worked in surgical specialties (p=0.026) (Table 2).

Table 2 Description of the studied physicians

		Group I N=95 (%)	Group II N=118 (%)	Total N=213 (%)	*p*-value
Age	Mean (SD)	41.3 (7.52)	46.9 (8.91)	44.5 (8.52)	0.043*
Gender	Male	43 (45.3)	56 (47.5)	99 (46.5)	0.052
	Female	52 (54.7)	62 (52.5)	114(53.5)	
Nationality	Saudi	46 (49.5)	58 (49.2)	104 (48.8)	0.077
	Non-Saudi	49 (50.5)	50 (50.8)	99 (51.2)	
Specialty	Non-surgical	39 (41.1)	28 (24.6)	67 (31.5)	0.026*
	Surgical	56 (58.9)	90 (75.4)	146 (68.5)	
Marital status	Never married	28 (29.5)	33 (28.9)	61(28.6)	0.039*
	Ever married	67 (70.5)	85 (71.1)	152 (71.4)	
Frequent use of elevator	No	56 (58.9)	43 (37.7)	99 (46.5)	0.036*
	Yes	39 (41.1)	175 (62.3)	214 (53.5)	
Daily working hours	Mean (SD)	8.1 (4.23)	7.9 (5.02)	8.0 (4.56)	0.361
Monthly night shifts	Mean (SD)	6.4 (2.03)	5.7 (3.81)	6.1 (2.52)	0.048*

*p-value significant at <0.05 level

Regarding females in group II, 68.6% significantly had vaginal secretions (p=0.038), 62.9% significantly had genital infection (p= 0.041) (Table 3). Both score percent for menopausal and menstruating females were significantly higher in group II [52.9 (9.35), 54.1 97.53), p= 0.032, 0.023 respectively] (Table 3). Moreover, the life style score percent was significantly higher for group II for males, females and total [66.0 (11.86), 66.6 (12.53), 66.3 (11.86), p= 0.022, 0.031, 0.045 respectively] (Table 4). There was significantly more BMI among group II [23.6 (4.6), p=0.04] (Table 4).

Table 3 Description of gynecological and obstetric histories of the studied female physicians

		Group I N= 52(%)	Group II N= 62(%)	Total N=114 (%)	*p*-value
For menopausal females		N=13 (25.0)	N=35 (56.5)	N=48 (42.1)	
Presence of vaginal secretions	No	8 (61.5)	11 (31.4)	19 (39.6)	0.038*
	Yes	5 (38.5)	24 (68.6)	29(60.4)	
Presence of genital infection	No	7 (53.8)	13 (37.1)	20 (41.7)	0.041*
	Yes	6 (46.2)	22 (62.9)	28 (58.3)	
Presence of cervical ulcer/erosion	No	8 (61.5)	19 (54.3)	27 (56.3)	0.136
	Yes	5 (38.5)	16 (45.7)	21(43.7)	
Presence of PID	No	7 (53.8)	23 (65.7)	30 (62.5)	0.048*
	Yes	6 (46.2)	12 (34.8)	18 (37.5)	
Score percent for menopausal females	Mean (SD)	42.3 (11.02)	52.9 (9.35)	50.0 (10.49)	0.032*
For menstruating females		N=39 (75.0)	N=27(43.5)	N=66 (57.9)	
Regularity of menses	Regular	28 (71.8)	12 (44.4)	40	0.029*
	Irregular	11 (28.2)	15 (55.6)	26	
Dysmenorrhea	No	21 (53.8)	11 (40.7)	32	0.049*
	Yes	18 (46.2)	16 (59.3)	34	
Low abdominal pain with menses	No	23 (59.0)	6 (22.2)	29	0.037*
	Yes	16 (41.0)	21 (77.8)	37	
*Use of contraceptives (for ever-married)***	*No*	*7 (20.6)*	*5(25.0)*	*12(22.2)*	*0.046**
	Local	*22 (64.7)*	*9(45.0)*	*31(57.4)*	
	Hormonal	*5 (14.7)*	*6 (30)*	*11(20.4)*	
Presence of vaginal secretions	No	29 (74.4)	9 (33.3)	38	0.032*
	Yes	10 (25.6)	18 (66.7)	28	
Presence of genital infection	No	31 (79.5)	10 (37.0)	41	0.049*
	Yes	8 (20.5)	17 (63.0)	25	
Presence of cervical ulcer/erosion	No	30 (76.9)	19 (70.4)	49	0.178
	Yes	9 (23.1)	8 (29.6)	17	
Presence of PID	No	27 (69.2)	18 (66.7)	45	0.037*
	Yes	12 (30.8)	9 (33.3)	21	
Score percent for menstruating females	Mean(SD)	34.5 (6.81)	54.1 (7.53)	44.3 (4.89)	0.023*
Total number of pregnancies	Mean (SD)	3.6 (1.78)	4.8 (2.31)	4.2 (1.65)	0.038*
Total number of births	Mean (SD)	3.1(2.04)	4.2 (1.60)	3.7 (1.83)	0.046*
Time lapse since last delivery in years	Mean (SD)	2.9 (1.25)	1.7 (0.84)	2.3 (1.13)	0.039*
Total score percent	Mean (SD)	38.4 (5.16)	53.5 (7.51)	46.0 (6.41)	0.005*

*p-value significant at <0.05 level

** *Number of menstruating ever married females in group I=34, in group II=20.*

Table 4 Life styles of the studied physicians

		Group I N=95 (%)	Group II N=118 (%)	Total N=213 (%)	*p*-value
Smoking history	No	15 (15.8)	20 (16.9)	35 (16.4)	0.033*
	Yes active	30 (31.6)	46 (39.0)	76 (35.7)	
	Yes passive	50 (52.6)	52 (44.1)	102 (47.9)	
Drinking coffee or tea more than twice a day	No	51 (53.7)	36 (30.5)	87 (40.8)	0.029*
	Yes	44 (46.3)	82 (69.5)	126 (59.2)	
Eating healthy diet	No	56 (58.9)	67 (56.8)	123 (57.7)	0.264
	Yes	39 (41.1)	51 (43.2)	90 (42.3)	
Practice exercise regularly	No	48 (50.5)	53 (44.9)	101 (47.4)	0.051
	Yes	47 (49.5)	65 (55.1)	112 (52.6)	
Sleeping pattern	Regular	29 (30.5)	31 (26.3)	60 (28.2)	0.013*
	Irregular	66 (69.5)	87 (73.7)	153 (71.8)	
Sleeping on a healthy mattress	No	38 (40.0)	34 (28.8)	72 (33.8)	0.045*
	Yes	57 (60.0)	84(71.2)	141 (66.2)	
**For females only: Wearing high heels	No	31 (59.6)	16 (25.8)	47 (41.2)	0.048*
	Yes	21 (40.4)	46 (74.2)	67 (58.8)	
Life styles score percent	Males: Mean (SD)	58.4 (12.54)	66.0 (11.86)	62.2 (10.52)	0.022*
	Females: Mean (SD)	64.2 (11.03)	66.6 (12.53)	65.4 (10.42)	0.031*
	Total Mean (SD)	61.3 (11.42)	66.3 (11.86)	63.8 (10.33)	0.045*
Total Number of hours using the phone/ tablet/ laptop per day	Mean (SD)	3.6 (2.78)	4.8 (3.80)	4.2 (2.97)	0.067
BMI	Mean (SD)	21.4 (5.23)	23.6 (4.6)	22.5 (3.81)	0.040*

*p-value significant at <0.05 level

**Female number for group I=52, group II= 62

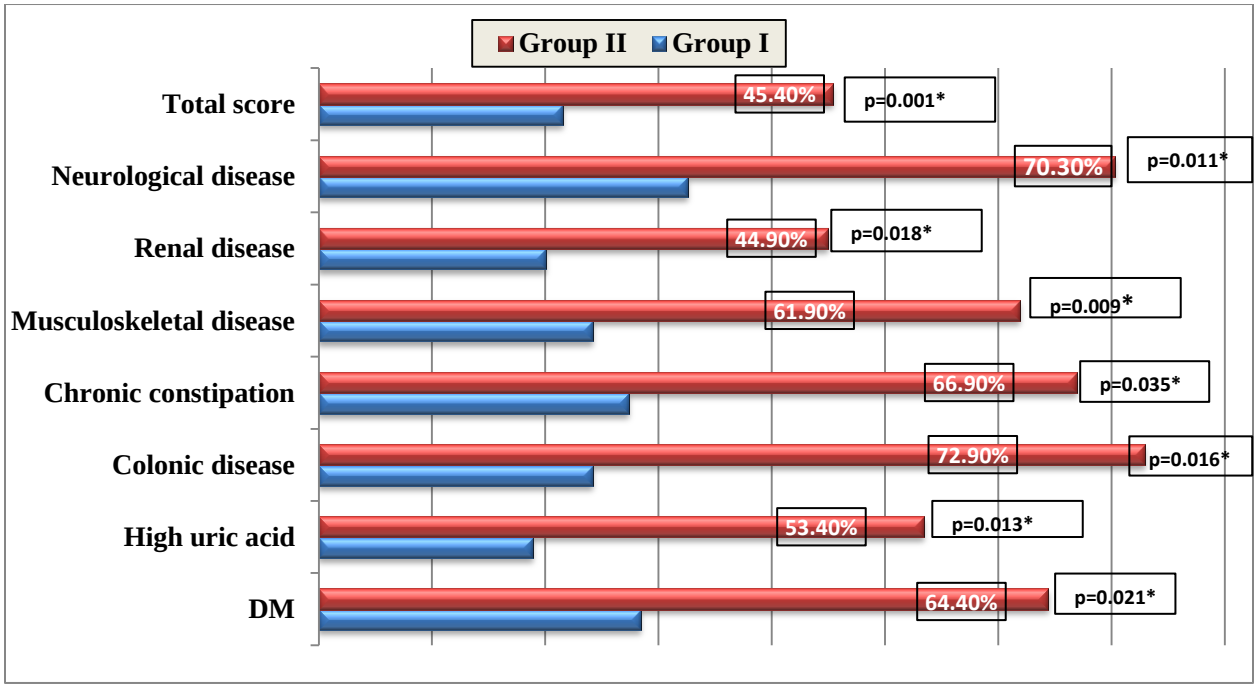

Figure 1 Comorbid conditions of the studied physicians

Group II had significantly more comorbidity percent score (45%, p= 0.001) (Figure 1). The most prevalent comorbidities were colonic diseases (72.9%, p= 0.016), neurological diseases (70.3%, p=0.011), and DM (64.4%, p=0.021) (Figure 1). Figure 2 describes functional disability components of Oswestry Questionnaire. It showed that pain was the main functional disabling item and encountered among 87.5% of group II, followed by disability on standing (76.1%) then sitting (71.2%) and walking (69.6%). The overall disability score for group II was 59.9% (Figure 2). The following were the significant predictors for LBP: age (OR=3.8, p=0.030), specialty (OR= 2.5, p=0.005), marital status (OR= 1.6, p=0.038), for females, obstetric and gynecological scores (OR=4.8, p=0.002), life style total score (OR= 3.2, p= 0.006), BMI (OR=2.5, p=0.01) and total comorbidity score (OR= 2.1, p=0.034) (Table 5).

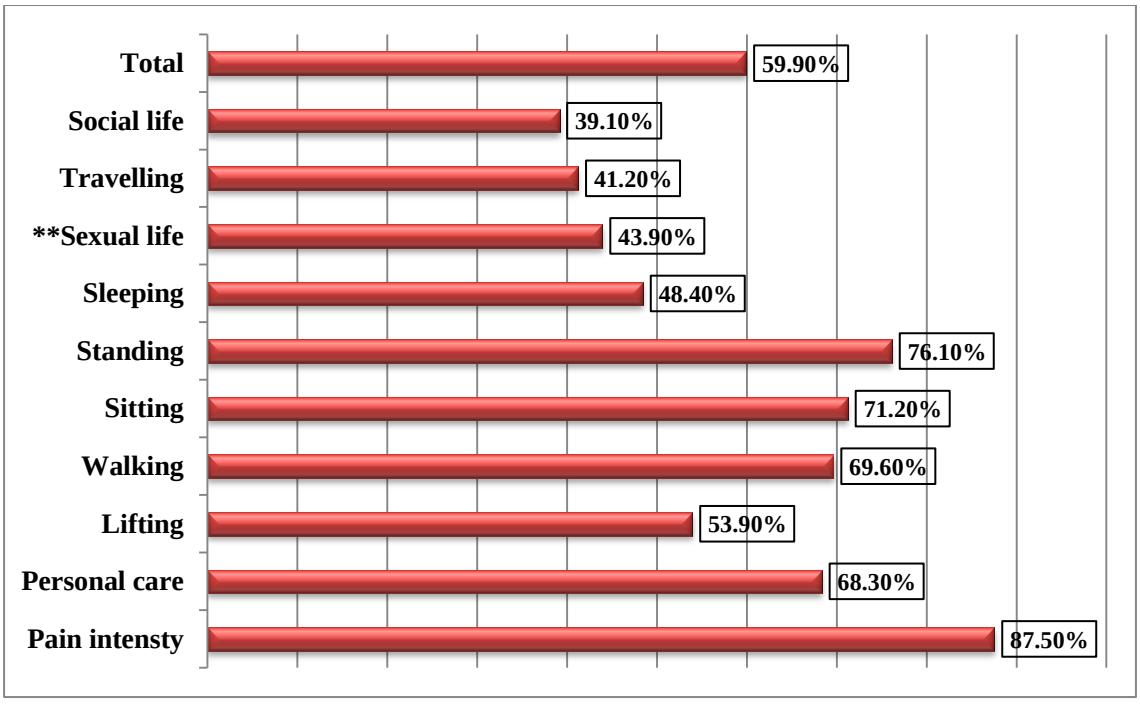

Figure 2 Oswestry questionnaire components' percent mean scoring for group II ** for ever-married physicians

Table 5 Multivariate logistic regression analysis of significant Predictors of LBP functional disability among the studied physicians

Independent variable	OR	95% CI for OR	*p*-value
Constant	1.3		0.001*
Age	3.8	2.4-4.8	0.030*
Specialty	2.5	1.3-3.7	0.005*
Marital status	1.6	1.1-2.6	0.038*
**Obstetric and gynecological histories	4.8	2.9-6.5	0.002*
Life styles	3.2	1.6-4.9	0.006*
BMI	2.5	1.8-7.1	0.010*
Comorbidities	2.1	1.7-4.8	0.034*
OR = odds ratio; CI = confidence interval; *P value is significant if P< 0.05. Dependent variable encoding negative = 0, positive = 1 R^2 = 0.857 ** for females only			

4. DISCUSSION

The current study aimed to describe the pattern of LBP among physicians and determine factors affect it in Saudi Arabia. The enrolled physicians were divided according to the presence of functional disability into two groups; group I (44.6%) without functional disability and group II (55.4%) with functional disability. About three fourths had mild to moderate disability. (LBP) is a common musculoskeletal complaint necessitating proper health care. The present work demonstrates that LBP functional disabilities in form of pain, standing, sitting and walking disabilities were the most common forms. According to studies, the

frequency of LBP has risen over time, and over half of the world's population, including physicians, will require LBP treatment at some point in their life, resulting in significant negative social, psychological, and economic consequences (Aseri et al., 2019).

The present study demonstrates that life styles; including smoking, exercise, sleeping pattern and BMI had a great influencing effect on development of LBP. These results were concomitant with other studies that prove their substantial effect on development of LBP (Mekonnen, 2019; Shiri & Falah-Hassani, 2016). Obesity is a significant factor in the development of LBP. This could be due to the overloading of the lumbosacral spine's articular processes, which are prone to degeneration (Gaowgzeh, 2019). One research proved that moderate to high activity during leisure time reduces LBP by 11–16% (Shiri & Falah-Hassani, 2016). The prevalence of LBP is high among smokers. This could be due to nicotine's systemic effects on the joints of the spine, which would accelerate joint degradation and enhance the possibility for pain impulse transmission in the central nervous system (Almalki et al., 2016).

The current research proved that monthly night shifts were associated with more functional disability related to LBP. It was shown that occupational environment, overtime work duties extended working hours' time , posture whilst working, and work shift timings were predisposing factors for LBP (Abolfotouh et al., 2015; Chan, 2017; Jeyakumar & Segaran, 2018). The current study found that ageing was a predictor of functional disability from LBP. It could be linked to low back overloading from work and domestic exposures, as well as the degenerative articular process that appears after 30 years of age (Awaji, 2016). The present work illustrated insignificant relation between gender and functional disability related to LBP; where female gender suffered more which the same finding that was obtained in similar researches (Vieira et al., 2012; de Moraes et al., 2012). Furthermore, physiological constitution with less muscle bulk and bone mass with some psychological factors may be predisposing factors (Al Shammari et al., 2019).

The present work revealed that marital status was a predictor for LPB functional disability. Moreover, the obstetric and gynecological history score was a proved predictor for LBP in the present research. Researches stated that the mechanism whereby females had consistently higher LPB functional disability was partially known and could be related to the effect of pregnancy, child care and double workday that make loads on musculoskeletal (domestic tasks plus paid work) (Al Shammari et al., 2019; Gaowgzeh, 2019). This finding was concomitant with a similar study (Chan, 2017) that proved and indiacted a high prevalence of LBP functional disability among married women as compared to single, divorced or widows. This may be attributed to cultural beliefs where women were exposed to strenuous activities in addition to their job-related activities (Chan, 2017; Jeyakumar & Segaran, 2018).

The current research demonstrated that associated comorbidities were predictors for LBP functional disability; mainly neurological, colonic diseases and DM which were stated in previous researches which concluded the burden of chronic pain was proved to be associated with comorbid medical conditions (de Moraes et al., 2012). Working department and workplace were recognized in the current work as an important predisposing factor for occurrence of LBP; chiefly surgical one. Surgical specialties as orthopedic and general surgeons, gynecologists, pediatricians, ophthalmologists, emergency and intensive care physicians, and anesthesiologists were at a greater risk of LBP development than others. This could be explained by extended procedure times and high physical and mental demands in those specialties (Alzidani et al., 2018).

5. CONCLUSION

Functional disability related to LBP was predicted by increased age, surgical specialties, married persons, poor obstetric and gynecological histories, poor life styles as smoking exercise and high BMI and associated comorbidities. It affects walking, sitting and standing and to less extent travelling and social life.

Recommendation

Improvement of life styles of physicians is mandatory to decrease the disability grades related to LBP.

Study limitations

The method of data collection through online questionnaire and not a community based; with sampling technique (a voluntary response sample) both limit the generalization of the results. Also the subjective nature of deciding the symptoms and functional disability of LBP is another limitation.

Contribution

Manal Ibrahim Hanafi Mahmoud conceptualized the study, supervised the study procedures, contributed to data collection, analysis, and interpretation, and drafted the first manuscript. Assmaa Ahmed Shaker designed the survey, helped with data

acquisition, analysis, and interpretation of the results and the first draft of the overall manuscript. Ahmed Sameh Salem, Rowaid Sohail Yazbik, Mohammed Khader Alamrishared in reviewing the literature and the introduction section, in addition to data collection contributed to quantitative data collection and analysis and interpretation of the results. Manal Ibrahim Hanafi Mahmoud made the essential contributions, critically reviewed, and approved the final manuscript.

Conflicts of interest

The authors declare that they have no conflict of interest.

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Data and materials availability

All data associated with this study are present in the paper.

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